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Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office

Cardiff Road
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NP10 8QQ

1. Your reference — P11784GB/JSH

2. Patent application number
(The Patent Office will fill this part in) — 22 JAN 2004 — 0401400.7

3. Full name, address and postcode of the or of each applicant *(underline all surnames)*

Nissan Technical Centre Europe Ltd
Cranfield Technology Park
Bedfordshire MK43 0DB
United Kingdom

08669574001

Patents ADP number *(if you know it)*

If the applicant is a corporate body, give the country/state of its incorporation — England and Wales

4. Title of the invention — Vehicle Seat Assembly

5. Name of your agent *(if you have one)* — David Keltie Associates

"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*

Fleet Place House
2 Fleet Place
London EC4M 7ET
United Kingdom

Patents ADP number *(if you know it)* — 040145020006

6. Priority: Complete this section if you are declaring priority from one or more earlier patent applications, filed in the last 12 months.

Country	Priority application number *(if you know it)*	Date of filing *(day / month / year)*

7. Divisionals, etc: Complete this section only if this application is a divisional application or resulted from an entitlement dispute (see note f)

Number of earlier UK application	Date of filing *(day / month / year)*

8. Is a Patents Form 7/77 (Statement of inventorship and of right to grant of a patent) required in support of this request?

Answer YES if:

a) any applicant named in part 3 is not an inventor, or
b) there is an inventor who is not named as an applicant, or
c) any named applicant is a corporate body.

Otherwise answer NO (See note d) — YES

Patents Form 1/77

9. Accompanying documents: A patent application must include a description of the invention. Not counting duplicates, please enter the number of pages of each item accompanying this form:

Continuation sheets of this form	
Description	16
Claim(s)	5
Abstract	
Drawing(s)	7

8

10. If you are also filing any of the following, state how many against each item.

Priority documents	
Translations of priority documents	
Statement of inventorship and right to grant of a patent (Patents Form 7/77)	
Request for a preliminary examination and search (Patents Form 9/77)	
Request for a substantive examination (Patents Form 10/77)	
Any other documents (please specify)	

11. I/We request the grant of a patent on the basis of this application.

Signature(s) David Keltie Associates David Keltie Associates Date 22 January 2004

12. Name, daytime telephone number and e-mail address, if any, of person to contact in the United Kingdom

Joanne Hopley 020 7329 8888

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Notes

a) If you need help to fill in this form or you have any questions, please contact the Patent Office on 08459 500505.

b) Write your answers in capital letters using black ink or you may type them.

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VEHICLE SEAT ASSEMBLY

The invention relates to a seat assembly for use in a vehicle, and in particular to a seat assembly which is adaptable for use by a child. The invention finds particular benefit when employed in vehicles fitted with an airbag on the passenger side of the vehicle.

For babies and very young children, typically up to the age of 18 months, it is recommended for a child seat to be arranged in a rear-facing direction to the direction of travel. Furthermore, it is often desirable for the child seat to be located on the passenger seat of the vehicle, next to the driver, so that the driver has the child in view at all times.

Due to increasing vehicle safety standards it is becoming more common to provide an airbag device on both the passenger side of the vehicle and on the driver's side. It is recognised, however, that it is not safe to provide an airbag on the passenger side of the vehicle if a rear-facing child seat is to be mounted in the passenger seat.

Car dealers have developed one solution to address this incompatibility, and that is to disable permanently the passenger airbag at the time of vehicle sale if there is a likelihood that the buyer will wish to mount a child seat in the passenger seat. This solution is undesirable, however, as due to the permanent disabling of the passenger airbag it does not then facilitate use of a passenger airbag in the event that no child seat is mounted in the passenger seat and an adult passenger is carried, for example. Furthermore, over the life of a vehicle it is likely that the requirements of the owner, or owners, may change, and there may be times when there is no longer a requirement to carry child passengers. The reverse problem

also occurs if a vehicle does not have the passenger airbag disabled at the time of manufacture, but there later becomes a requirement to use a child seat in the passenger seat.

Another proposed solution is to provide the vehicle with a switch for allowing the user to disable or enable the airbag depending on whether a rear-facing child seat is to be used in the passenger seat. This solution is also undesirable, however, due to the risk of inadvertent disabling of the passenger airbag.

One other problem facing vehicle manufacturers is the adaptability of vehicles for different situations. For example, although a vehicle user may wish to seat a child in the front passenger seat on some occasions, there may often be circumstances when an adult passenger must be seated instead.

It is an object of the present invention to provide a seat assembly, suitable for accommodating a child, which seeks to address at least one of the aforementioned problems.

According to a first aspect of the present invention, there is provided a vehicle seat assembly comprising:

a passenger seat having a passenger seat member and a passenger seat back, and

a child seat assembly having a child seat portion, a child back rest portion and first and second alternative child seat configurations,

wherein the passenger seat member is movable between a first position in which the child seat assembly is substantially hidden from view and a second position in which the child seat assembly is exposed to enable a seat position to be provided for a child passenger when said child seat assembly is in the first child seat configuration.

In one advantageous embodiment, the child seat assembly is removably mounted upon the passenger seat so that it can be removed completely from the vehicle, if desired. In this way, a seated child can be removed from the vehicle and carried conveniently simply by removing the child seat assembly from the passenger seat, but without having to remove the child from the child seat assembly.

In one embodiment, the child seat portion is coupled to the child back rest portion, for example through a hinge arrangement, to allow interchange between the first and second child seat configurations through unfolding and folding of these parts relative to one another (when unfolded the first child seat configuration is provided and when folded the second child seat configuration is provided). When the child seat portion and the child seat back portion are folded together, a compact and portable unit is provided for ease of carrying. When the child seat portion and the child seat back portion are unfolded, a seat configuration is provided for a child whether the child seat assembly is mounted within or removed from the passenger seat.

In an alternative embodiment, the child seat and back rest portions may be integrally formed from a suitably flexible material to allow unfolding and folding between the first and second child seat configurations.

The passenger seat may include a seat base defining an internal volume within which the child seat assembly is accommodated, wherein the seat base is provided with a seat base mount and the child seat assembly is provided with at least one child seat mount for co-operation with said seat base mount to enable mounting of the child seat assembly thereon. When folded, the child seat assembly can be hidden from view within the internal volume of the seat base by lowering the passenger seat member to rest upon the seat base.

In one embodiment, the child seat assembly includes first and second child seat ISOFIX mounts for co-operation with an ISOFIX-compatible support, for example a rear-side bar, provided on the seat base. ISOFIX-type mounts are well known and provide a universal automotive industry standard for mounting child seats within vehicles.

Additionally, the child seat back portion may be provided with a releasable mounting means to permit the child back rest portion to be mounted upon the passenger (e.g. the seat base thereof) in a removable fashion.

If it is a requirement for larger children to be carried in child seat assembly, the passenger seat back may be provided with a movable section to define an opening for accommodating a seated child's legs and/or feet. The section of the seat back may be removable completely from the passenger seat back or may take the form of a flap section.

In a particularly preferred embodiment, the vehicle seat assembly includes indication means for providing an indication of whether the passenger seat member is in the first or second position. For example, the indication means may

include an electrical switch arrangement. The switch arrangement may be a push-type or on-off switch arrangement, wherein one switch part is mounted on a fixed part of the passenger seat and the other switch part is mounted on the movable passenger seat member.

Alternatively, the switch arrangement may take the form of a tilt-type switch arrangement.

Preferably, the passenger seat forms a front passenger seat of the vehicle, namely that seat mounted adjacent to a vehicle driver's seat assembly.

The child seat assembly preferably includes means for supporting a child's head to prevent unwanted lateral and/or angular movement thereof in the event of a side-vehicle impact. For example, said supporting means may take the form of a carry-handle. The handle may be of generally horse-shoe shape to envelope the child seat back when in a handle-stowed position, and may be movable into a carrying position to enable convenient carrying of the child seat assembly when it is removed from the seat assembly.

According to a second aspect of the invention, there is provided a child seat assembly forming part of a vehicle seat assembly of the first aspect of the invention, wherein the child seat assembly is provided with a handle by which the child seat assembly may be carried.

Preferably, the handle is movable between a stowed position, which is adopted in circumstances in which the seat position is provided for a child passenger, and a

carrying position which is adopted in circumstances in which the child seat assembly is removed from the seat assembly altogether and needs to be carried. Optionally, the handle may be coupled with a membrane which is movable with the handle so as to provide at least a partial cover for a child seated within the child seat assembly. For example, if the membrane is waterproof then a child being carried within the child seat assembly will be protected from rain.

The vehicle seat assembly may also include a tray mounted within the internal volume of the seat base to provide a storage volume when the child seat assembly is removed from the seat assembly. The tray may be a permanent feature of the assembly, or may mounted within the internal volume in such a way that it can be removed easily, if required.

It will be appreciated that the preferred and/or optional features of the second aspect of the invention may be incorporated alone or in appropriate combination within the first and other aspects of the invention also.

According to a third aspect of the invention, there is provided a child seat assembly for interchangeable mounting within a vehicle seat assembly of the first aspect of the invention or a push-chair frame of a fourth aspect of the invention, wherein the child seat assembly includes at least one ISOFIX mount for co-operation with an ISOFIX-compatible support provided on the push-chair frame.

The child seat assembly is particularly versatile and provides a convenient means of moving a child between the vehicle, a push-chair or any other suitable child-carrying apparatus.

According to a fourth aspect of the invention, therefore, there is provided a push-chair including a push-chair frame and a child seat assembly of the third aspect of the invention, wherein the push-chair frame includes an ISOFIX-compatible support for co-operation with an ISOFIX mount of the child seat assembly.

According to a fifth aspect of the invention, there is provided a vehicle having a front passenger seat assembly in accordance with the first aspect of the invention and an airbag provided on the front passenger side of the vehicle, the vehicle further comprising means for automatically disabling the passenger airbag in the event that the indication means provides an indication that the passenger seat member has moved to the second position.

This avoids a need for the airbag facility in the car to be disabled by other means if a child needs to be seated in the front passenger seat of the vehicle.

The present invention will now be described, by way of example only, with reference to the accompanying drawings in which:

Figure 1 is a perspective view of a seat assembly of a first embodiment of the invention when an adult seat position is provided,

Figure 2 is a perspective view of the seat assembly in Figure 1 when in an alternative position in which a child seat is made accessible for seating a child,

Figure 3 is a perspective view of a part of the seat assembly in Figure 1 from a reverse angle and with the seat back removed, to illustrate more clearly the mounting of the removable child seat upon the seat assembly,

Figure 4 is a perspective view of the removable child seat in Figures 2 and 3 with a carry handle thereof in a stowed position which is adopted when the child seat is mounted within the seat assembly, as in Figure 2,

Figure 5 is a perspective view of the removable child seat in Figure 4 with the carry handle in a carrying position which is adopted when the child seat is removed from the seat assembly,

Figure 6 shows the removable child seat in Figures 4 and 5 when adapted for mounting within a child's push-chair, and

Figure 7 is a schematic illustration of the control system for an airbag for use in a vehicle provided with the seat assembly of Figure 1.

Figure 1 shows a vehicle seat assembly of a first embodiment of the invention. It is a function of the seat assembly to provide two different seating configurations for passengers, one in which an adult passenger is seated so as to face in a forwards direction (i.e. towards the front of the vehicle) and one in which a child passenger is accommodated to face in a reverse direction (i.e. towards the rear of the vehicle). In other words, a first seating position is provided for an adult passenger facing in a forwards direction and a second seating position is provided for a child passenger facing in a rearwards direction.

The seat assembly includes a passenger seat, referred to generally as 10, having a seat back 14 defining a back rest surface 16 for an adult passenger and having, at an upper end thereof, a head rest 18 for the passenger's head. At the lower end of

the seat back 14, a seat base 19 supports a first seat member 20, commonly referred to as a 'squab', which defines a seating surface 21 for an adult passenger. In the view shown in Figure 1, the seat assembly of the present invention has the appearance of a passenger seat in known vehicles.

As can be seen more clearly in Figure 2, the seat base 19 defines an internal seat base volume 22 within which a removable child seat assembly 12 is mounted. A front edge of the seat member 20 is hingedly mounted to the seat base 19 by a suitable hinge arrangement (not shown) so as to permit hinged movement of the seat member 20 between first and second positions. In the first position, the seat member 20 rests generally horizontally on the seat base 19 to define a 'conventional' seat position for a passenger (as shown in Figure 1). In this position the internal volume 22 of the seat base 19 is enclosed and the child seat assembly 12 is hidden from view. As it is usual for the driver or passenger seat base in a vehicle to be slightly inclined to the horizontal for comfort reasons, reference to a seat member being "generally horizontal" shall be taken to include such slightly inclined seating positions. In the second position, the seat member 20 is raised into an inclined or generally upright position to open the internal volume 22, thus making the child seat 12 accessible.

The seat base 19 is movable within guide tracks 24 that are mounted on the floor of the vehicle so as to permit movement of the complete seat assembly relative to the vehicle floor in forward and rearward directions, as required by the passenger.

The child seat 12 has two different configurations, one in which it can be accommodated within the enclosed volume 22 of the seat base 19 and one in which it provides a suitable seating position for a child. Referring again to

Figures 2 and also to Figure 3, the child seat 12 includes a seat portion 26 and a back rest portion 28 (only the child seat portion 26 is visible in Figure 2) which are foldable relative to one another to provide two different child seat configurations. In this embodiment, the seat and back rest portions 26, 28 are formed as separate parts in a hinged arrangement. In a first configuration, the seat part 26 and the back rest part 28 are in folded contact to form a relatively compact unit with can be accommodated within the internal seat base volume 22 when the passenger seat member 20 rests upon the seat base 19. In a second configuration, the seat back 28 and the seat part 26 are unfolded to provide a suitable seating position for a child (also shown in Figures 4 and 5). In both Figure 2 and Figure 3, the child seat 12 is shown in the folded position in which the back rest part 28 is folded into contact with the seat part 26.

From the foregoing description it will be appreciated that the seat assembly of the present invention offers two different seat positions. In an adult seat position, the seat member 20 defines a seating surface 21 for an adult passenger facing forwards in the vehicle. In a child seat position, the seat member 20 is opened to allow the child seat 12 to be unfolded to define a seating position for a child passenger facing rearwards in the vehicle. It will be appreciated that when in the first position, the child seat 12 is substantially hidden from view by virtue of the seat member 20 enclosing the internal seat base volume 22.

The child seat 12 is mounted within the seat base 19 by means of an ISOFIX compliant mounting arrangement which would be well known to a person skilled in this art. The ISOFIX child seat system is an automotive industry standard proposed by the United Nation Economic Commissions for Europe. The ISOFIX mounting arrangement includes a support in the form of a rear-side bar 30 which

extends laterally across the rear side of the seat base 19. First and second laterally spaced seat mounts 32 are provided at the rear edge of the child seat part 26, which are detachably coupled to the rear-side bar 30. As can be seen in Figure 3, a second support in the form of a front-side bar 34 extends laterally across the front side of the seat base 19. The child seat 12 is provided with a releasable catch mechanism (not shown) which co-operates with the front-side bar 34. For example, a lower portion of the reverse side of the child back rest part 28 (i.e. the side of the back rest part 28 which does not define the back rest surface) may be provided with at least one spring-loaded claw which co-operates with the front-side bar 34 of the seat base 19 in a releasable fashion. The provision of a releasable claw is generally known in ISOFIX-type mechanisms and so would be familiar to those skilled in the art. By pushing the claw onto the front side bar 34, the mouth of the claw is forced opened, against the spring force, until the bar 34 is received within the claw mount. The spring force causes the mouth to close around the bar 34 so as to latch the child seat 12 securely to the seat base 19. A release lever (also not shown) is provided which connects with the claw through a linkage, for example. By pulling on the release lever, the mouth of the claw is caused to open, against the spring force, allowing the child seat 12 to be moved away from the bar 34 to de-couple it from the base 19.

The child seat 12 can be removed from the seat base volume 22 by detaching the mounts 32 from the rear-side bar 30 and releasing the claw from the front-side bar 34.

The construction of the child seat 12 can be seen more clearly in Figures 4 and 5. The child seat part 26 and the back rest part 28 are coupled together by means of a child seat hinge arrangement (not shown), typically in the form of a conventional hinged mount, so as to permit the child seat 12 to be moved

between its folded and unfolded states. The child seat is also provided with a pivotally mounted handle 38 having a generally horseshoe shape. The handle 38 is pivotally mounted to the child seat 12 by means of first and second pivot mounts 39, 41. The handle 38 is provided with side walls 40a, 40b, which depend downwardly from an upper section 40c of the handle 28. The side walls 40a, 40b may be provided with a plurality of openings 42, if desired. This has the advantage that, even if the side walls 40a, 40b of the handle 38 are quite pronounced, the child can still be seen through the openings.

The first pivot mount 39 is pivotally connected to a base end of the first handle side wall 40a and the second pivot mount 41 is pivotally connected to a base end of the second handle side wall 40b so as to allow the handle 38 to be moved between stowed and carrying positions. When in the stowed position, the handle 38 is generally upright (as shown in Figure 4) so that the handle 38 envelopes the back rest part 28 of the child seat 12. When in the carrying position, the handle 38 is inclined forwards relative to the back rest part 28 (as shown in Figure 5) so that the handle 38 provides a suitable means for carrying the child seat 12 when it is removed from the seat assembly 10 altogether.

When the seat assembly is in the child-carrying seat configuration, the handle 38 is moved into the upright position of Figure 4. In the event of a side vehicle impact (cross-vehicle impact), the handle side walls 40a, 40b provide a lateral support means for the child's head and thus provide an advantageous safety feature. When the child seat 12 is removed from the seat base volume 22, the handle 38 can be pivoted forwards (relative to the back rest part 28) to provide a convenient means for carrying the child seat 12. Optionally, the child seat 12 may also be provided with a movable cover or membrane (not shown in the

accompanying figures) in attachment with the handle 38. As the handle 38 is pivoted forwards about the mounts 39, 41, the membrane is drawn forwards to create a part-enclosed volume 44 for a seated child. Preferably, the membrane is made of a waterproof material.

As in conventional seat assemblies for vehicles, the seat back 12 is provided with an adjustment means 36, in the form of a so-called "recline dial", for permitting the angle of inclination of the seat back 14 relative to the seat base 19 to be adjusted. Typically, such adjustment means permits the seat back 14 to be moved between a first position in which it is substantially vertically inclined to the seat base 19 and a fully reclined position in which the seat back 14 is almost in horizontal alignment with the seat base 19.

It is a common problem with known child seat assemblies that once children grow beyond a certain size it is difficult to accommodate them in rear-facing seat positions due to the limited leg space available for their legs. To alleviate this problem, the seat back 14 of the passenger seat 10 may be provided with a movable panel which can be moved when the child seat configuration is adopted to define an opening in the seat back 14. The panel may be removable completely from the seat back 14 or may take the form of a flap which is mounted to a part of the seat back 14 through a suitable hinge arrangement.

The seat assembly may also include a tray (not shown in the accompanying figures) which is received within the internal volume 22 of the seat base 19 so that the child seat assembly 12 locates within the tray when it is mounted upon the supports 30, 34. The provision of the tray is advantageous as it provides an additional storage vessel for luggage if the child seat 12 is removed from the

assembly altogether. The tray may be removable or may be a permanent feature of the seat base 19.

Referring to Figure 6, in vehicles provided with a passenger airbag 56 it is another feature of the invention that it includes a means for disabling the passenger airbag of the vehicle in certain circumstances. In particular, the seat member 20 and the seat base 19 are provided with co-operable parts of a switch arrangement 46 for providing an indication of whether the seat member 20 is in its generally upright, inclined position or its generally horizontal, closed position. The seat member 20 is provided with a first switch contact 48 and the seat base 19 is provided with a second switch contact 50. The first and second contacts 48, 50 are electrically co-operable with one another so that when the seat member 20 is lowered into contact with the seat base 19 to define the adult seat configuration, the first and second switch contacts 48, 50 are in electrical connection. The electrical connection between the first and second contacts 48, 50 is broken when the seat member 20 is raised out of the horizontal position, exposing the child seat 12 to allow it to be unfolded within the seat base volume 22. Upon breaking electrical connection between the first and second switch contacts 48, 50, an indication is provided to an airbag control system 52 that the seat member 20 has been raised. The airbag control system 52 then generates a control signal 54 which disables the passenger airbag 56. A signal 58 may also be provided from the passenger airbag 56 to the airbag control system 52, for example to inform the airbag control system 52 of airbag status.

When reconnection between the first and second switch contacts 48, 50 is established upon the seat member 20 being lowered (i.e. to provide the adult seat

configuration), the airbag control system 52 provides a control signal 54 to enable functioning of the passenger airbag 56.

It is one benefit of the present invention, therefore, that an automatic means 46, 52, 54 is provided for disabling the passenger airbag 56 in the event that the passenger seat 10 is moved into the child seat configuration, said means also being configured to automatically enable the passenger airbag 56 in the event that the passenger seat 10 is moved into the adult seat configuration.

The switch arrangement 46 may take the form of an 'on/off'-type switch or a 'push-to-make' type switch, as described above. Alternatively, a more sophisticated tilt-type switch mechanism may be provided, whereby the generation of the passenger airbag disable signal 54 is initiated only in circumstances in which the seat member 20 is inclined relative to the seat base 19 beyond a certain amount and one it has been detected that the child seat 12 has been removed. It is important to initiate the disable signal only in circumstances in which the child seat 12 has been removed so that inadvertent disabling does not occur should a severe vehicle impact occur.

For a tilt-type switch embodiment, the angle of inclination of the seat member 20 at which the disable signal 54 is enabled may be adjustable.

Although not shown in Figures 4 and 5 for clarity, Figure 7 illustrates a further feature of the child seat 12, namely a harness or restraining means 60 for the child. Figure 7 also illustrates how the child seat 12 can be adapted for use as the seat of a push-chair 62. The push-chair includes a push-chair frame 62 having a seat support frame 64 with a front-side bar 66 with which the ISOFIX mounts 32

of the child seat 12 co-operate when the seat 12 is mounted upon the frame 62. The seat back 28 of the child seat 12 rests upon a back support frame 68 and suitable attachment means (not shown) are provided to secure these parts together. It is therefore a further advantage of the invention that it can be interchanged conveniently between the vehicle and the push-chair. If it is not required to carry the child in the child seat 12 itself, the parts 26, 28 can be folded together to form a portable and compact unit which can be carried conveniently.

CLAIMS

1. A vehicle seat assembly including;

a passenger seat (10) having a passenger seat member (20) and a passenger seat back,

a child seat assembly (12) having a seat portion (26), a back rest portion (28) and first and second alternative child seat configurations,

wherein the passenger seat member (20) is movable between a first position in which the child seat assembly (12) is substantially hidden from view and a second position in which the child seat assembly (12) is exposed so as to enable a seat position to be provided for the child passenger when said child seat assembly (12) is in the first child seat configuration.

2. The vehicle seat assembly as claimed in claim 1, wherein the child seat assembly (12) is removably mounted upon the passenger seat (10).

3. The vehicle seat assembly as claimed in claim 1 or claim 2, wherein the seat portion (26) is coupled to the back rest portion (28) to allow interchange between the first and second child seat configurations through unfolding and folding of said portions (26, 28).

4. The vehicle seat assembly as claimed in claim 3, wherein the back rest portion (28) of the child seat assembly (12) is coupled to the seat portion (26)

through a hinge arrangement.

5. The vehicle seat assembly as claimed in any one of claims 1 to 4, wherein the passenger seat includes a seat base (19) defining an internal volume (22) within which the child seat assembly (12) is accommodated, wherein the seat base (19) is provided with a seat base mount (30) and the child seat assembly (12) is provided with at least one child seat mount (32) for co-operation with said seat base mount (30) to enable mounting of the child seat assembly (12) thereon.

6. The vehicle seat assembly as claimed in claim 5, including first and second child seat ISOFIX mounts (32) for co-operation with a rear-side bar (30) provided on the seat base (19).

7. The vehicle seat assembly as claimed in claim 5 or claim 6, wherein the back rest portion (28) is provided with a releasable mounting means for co-operation with the passenger seat (10) in a removable fashion.

8. The vehicle seat assembly as claimed in any one of claims 5 to 7, further comprising a tray mounted within the internal volume (22) to provide a storage volume when the child seat assembly (12) is removed from the seat assembly.

9. The vehicle seat assembly as claimed in claim 8, wherein the tray is removably mounted within the internal volume (22) .

10. The vehicle seat assembly as claimed in any one of claims 1 to 9, wherein the passenger seat back (14) is provided with a movable section to define an opening for accommodating a child's legs and/or feet when the child seat is

seated in the child seat assembly (12).

11. The vehicle seat assembly as claimed in claim 10, wherein the movable section is removable completely from the passenger seat back (14).

12. The vehicle seat assembly as claimed in any one of claims 1 to 11, including indication means (46, 52, 54) for providing an indication of whether the passenger seat (10) is in the first or second position.

13. The vehicle seat assembly as claimed in claim 12, wherein the indication means includes a switch arrangement (48, 50).

14. The vehicle seat assembly as claimed in claim 13, including a push-type or on-off switch arrangement, wherein one switch part is mounted on a fixed part (19) of the passenger seat (10) and the other switch part is mounted on the movable passenger seat member (20).

15. The vehicle seat assembly as claimed in claim 14, including a tilt-type switch arrangement.

16. The vehicle seat assembly as claimed in any one of claims 1 to 15, wherein the passenger seat (10) forms a front passenger seat of a vehicle mounted adjacent to a vehicle driver's seat assembly, when in use.

17. The vehicle seat assembly as claimed in any one of claims 1 to 16, wherein the child seat assembly includes means (38) for supporting a child's head to prevent unwanted lateral and/or angular movement thereof in the event of a side-

vehicle impact.

18. The vehicle seat assembly as claimed in claim 17, wherein said supporting means includes a handle (38) of generally horse-shoe form to envelope the child seat back (28) when in a handle-stowed position, said handle being movable into a carrying position to enable convenient carrying of the child seat assembly (12) when it is removed from the seat assembly.

19. A portable child seat assembly forming part of a vehicle seat assembly as claimed in any one of claims 1 to 18.

20. The portable child seat assembly as claimed in claim 19, including a handle (38) which is movable between a stowed position adopted in circumstances and a carrying position.

21. The portable child seat assembly as claimed in claim 20, wherein the handle (38) is coupled with a membrane which is movable with the handle (38) so as to provide at least a partial cover for a child seated within the child seat assembly (12).

22. A portable child seat assembly (12) for interchangeable mounting within (i) a vehicle seat assembly as claimed in any one of claims 1 to 18 or (ii) a push-chair frame (62), wherein the child seat assembly (12) includes at least one ISOFIX mount (32) for co-operation with ISOFIX-compatible supports (30, 66) provided on the vehicle seat assembly and/or push-chair frame (62).

23. A push-chair including a push-chair frame (62) and a child seat assembly

as claimed in claim 22, wherein the push-chair includes the ISOFIX-compatible support (66) for co-operation with the ISOFIX mount (32) of the child seat assembly.

24. A vehicle having a front passenger seat assembly (10) and an airbag (56) provided on the front passenger side of the vehicle, wherein the front passenger seat assembly (10) is as claimed in any one of claims 12 to 18, the vehicle further comprising means (46, 52, 54) for automatically disabling the passenger airbag (56) in the event that said indication means provides an indication that the passenger seat (10) has moved to the second seat position.

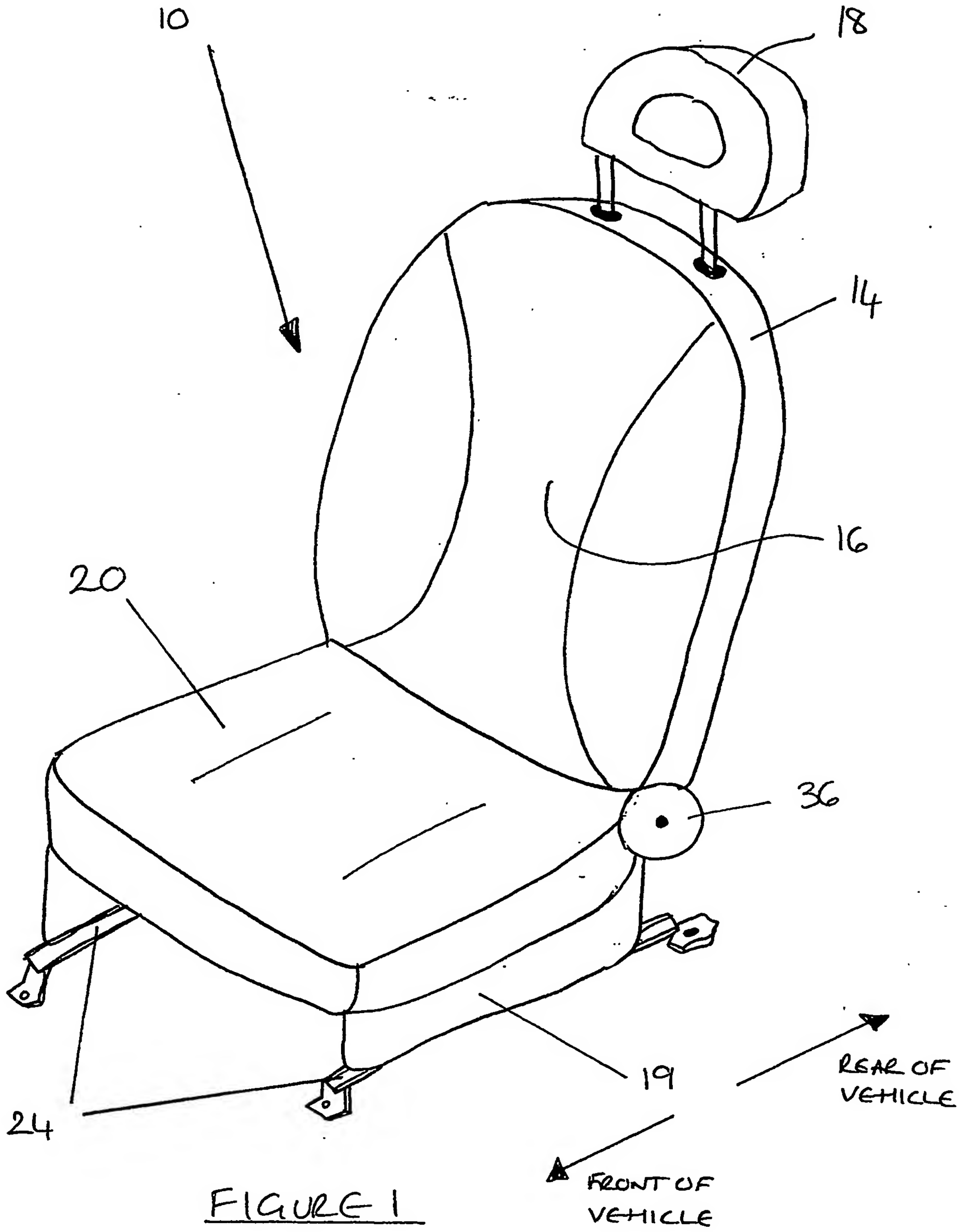

FIGURE 1

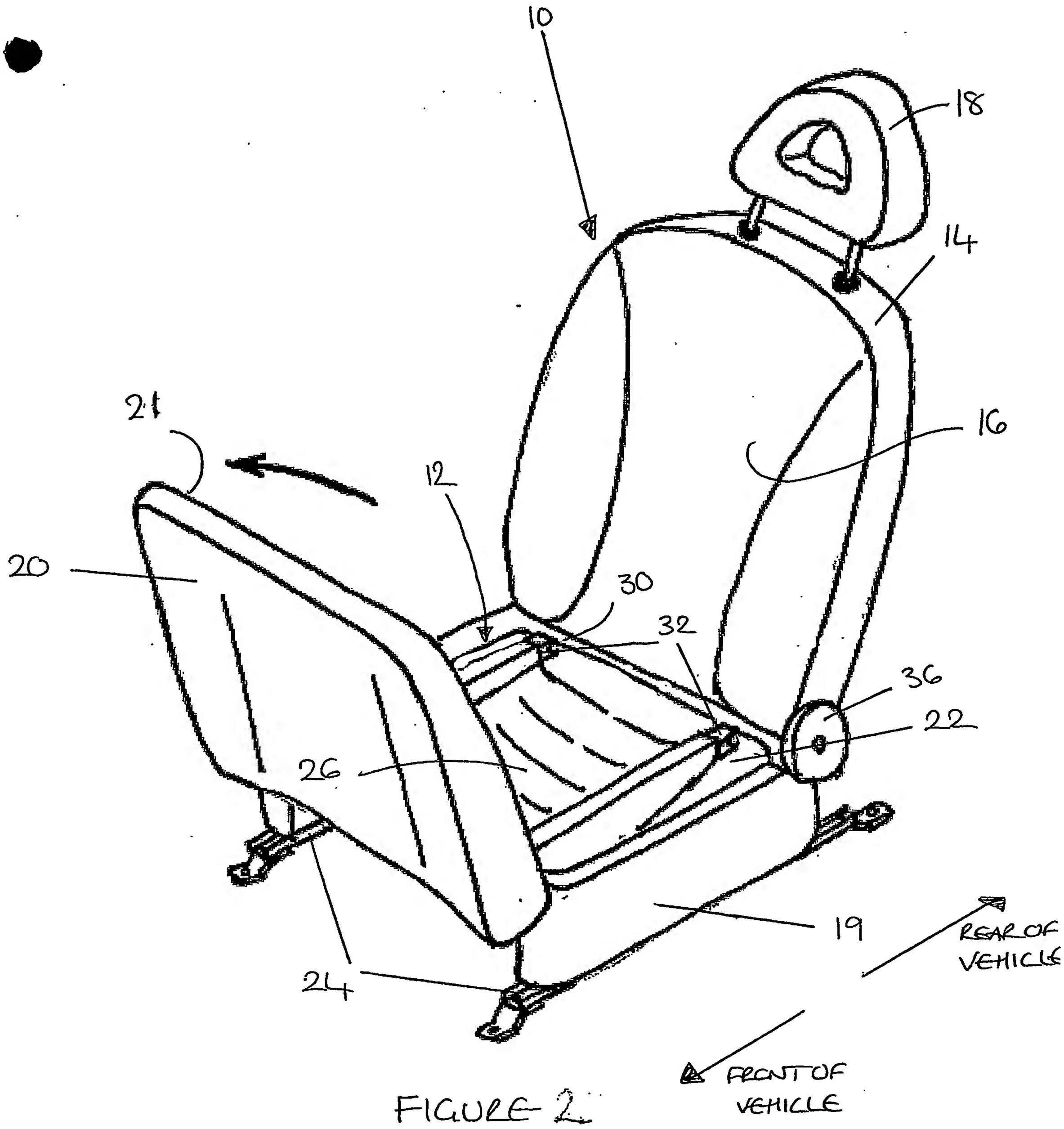
10
18
14
16
21
12
20
30
32
36
22
26
19
REAR OF VEHICLE
24
FRONT OF VEHICLE

FIGURE 2

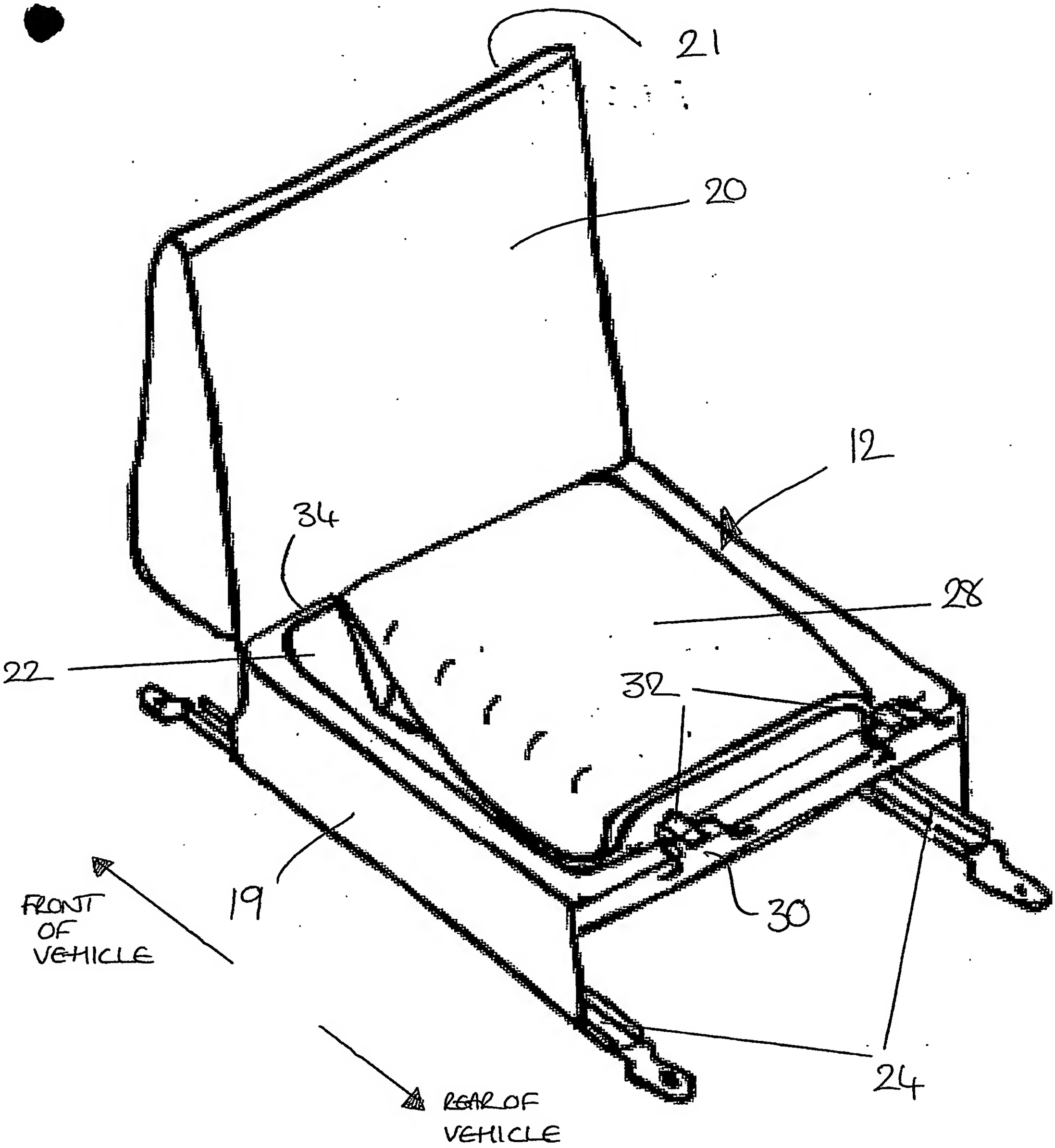

FIGURE 3

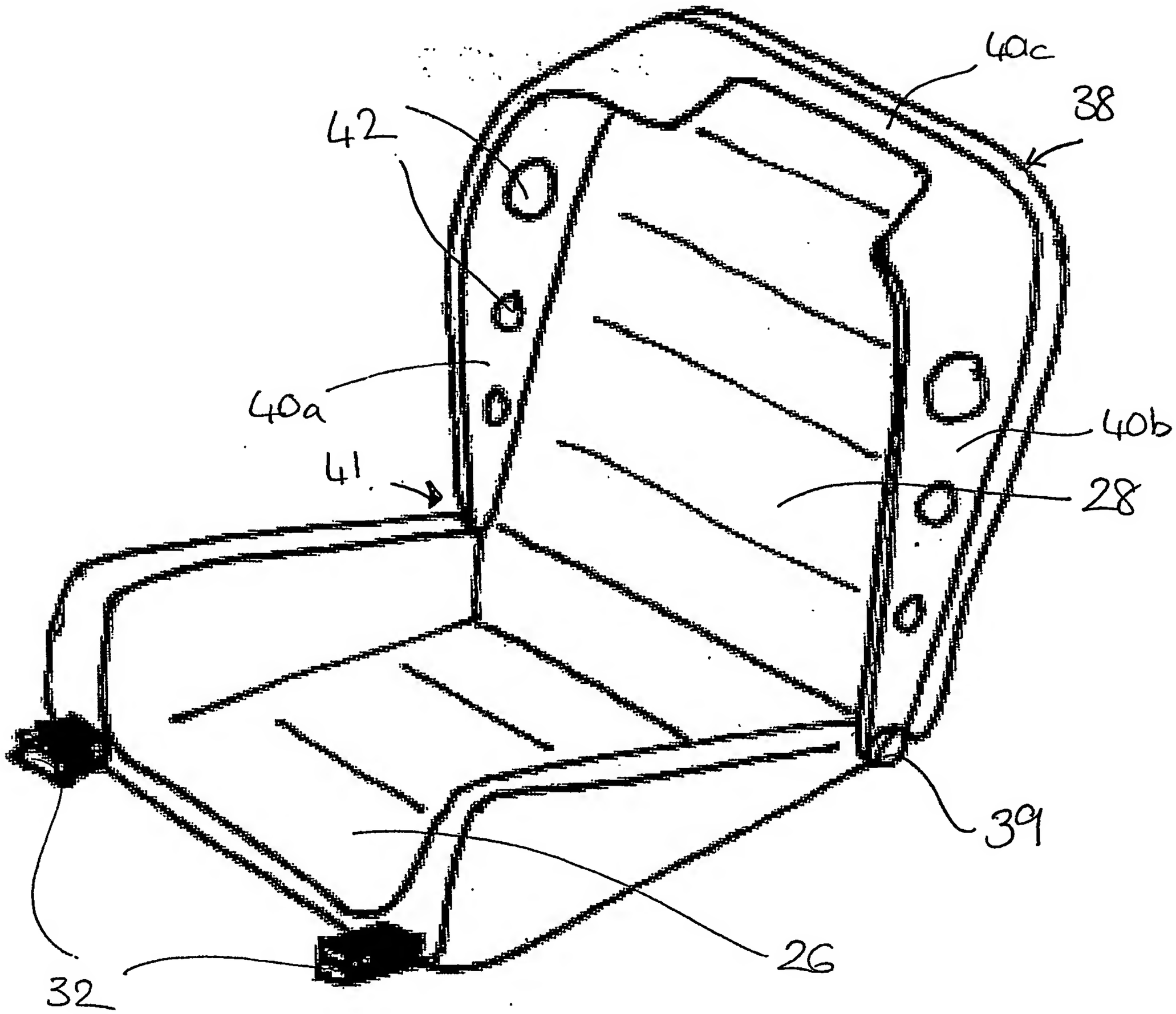

FIGURE 4

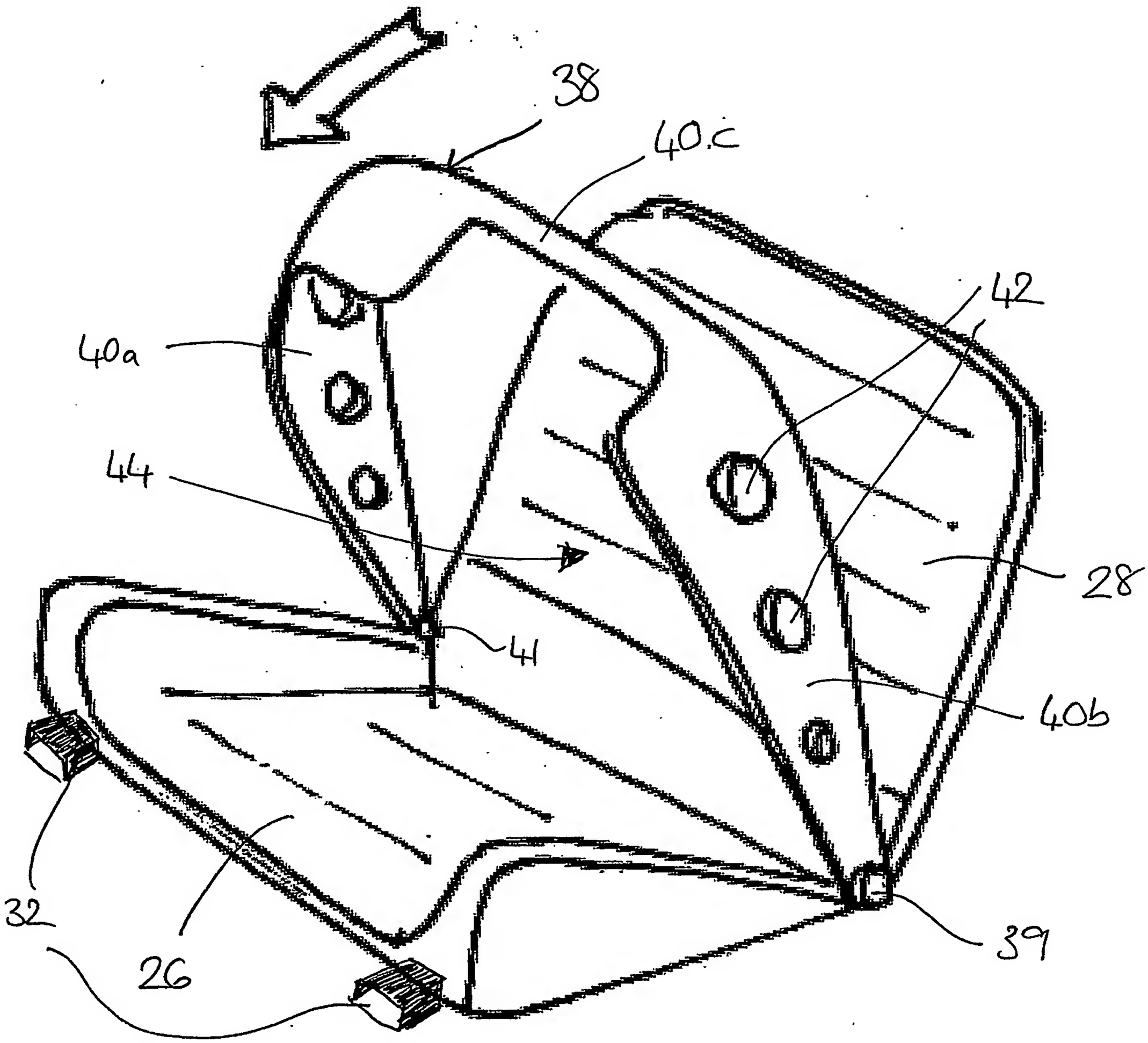

FIGURE 5

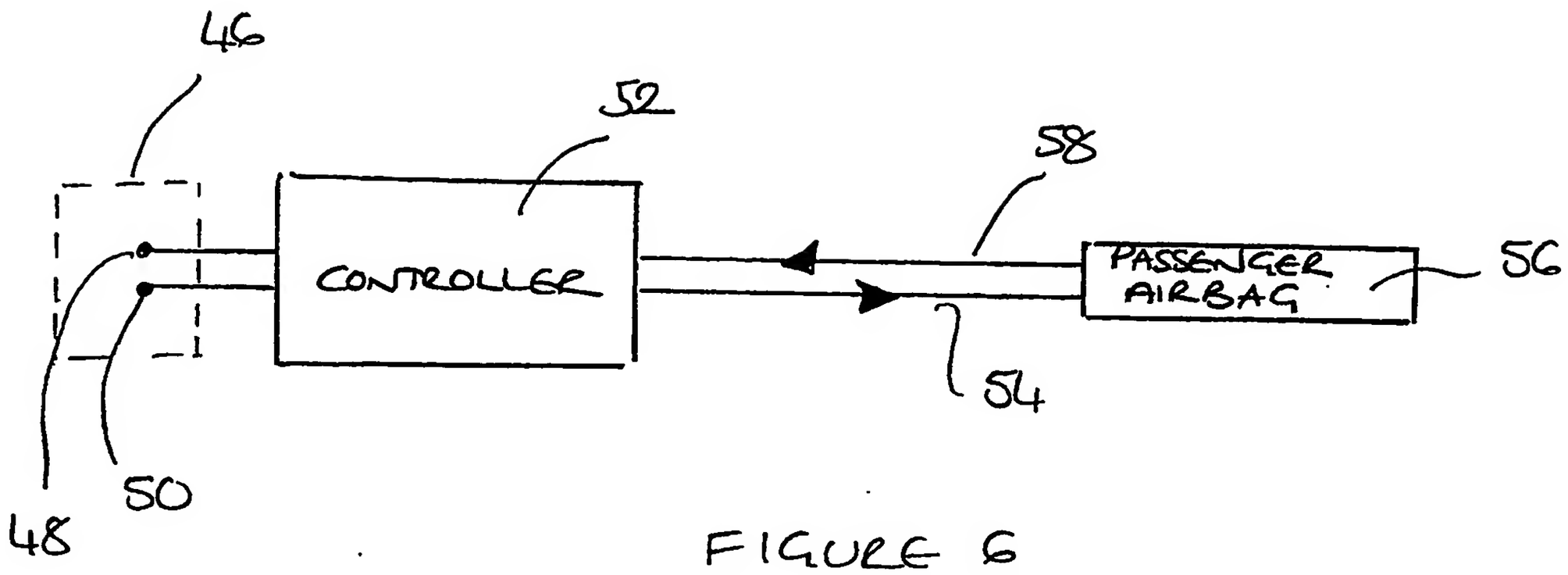

FIGURE 6

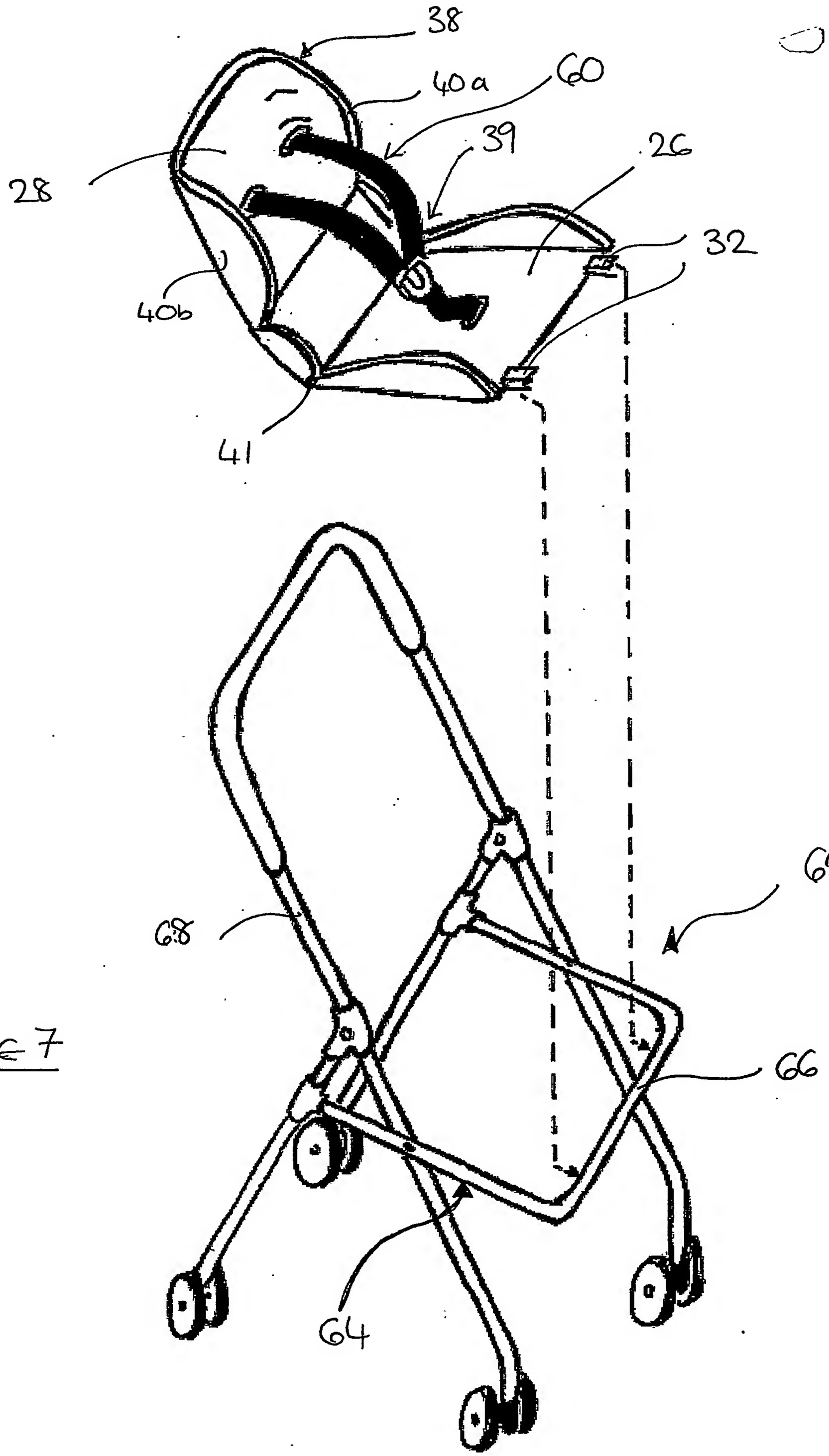

FIGURE 7